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Chee-hwan Yang

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STAAS & HALSEY LLP  
SUITE 700  
1201 NEW YORK AVENUE, N.W.  
WASHINGTON, DC 20005

EXAMINER

LIE, ANGELA M

ART UNIT

PAPER NUMBER

2821

DATE MAILED: 09/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/751,471	YANG, CHEE-HWAN	
	<b>Examiner</b>	<b>Art Unit</b>	
	Angela M. Lie	2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 17 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 26 is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 6-11 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Hayes et al (US 2002/0123312).

As to claim 1, Hayes discloses the planar inverted F antenna comprising: a ground plane (Figure 4A element 43), a first radiator (Figure 4A element 42b) connected to the ground plane (43), spaced from the ground plane (as shown in figure 4A elements 43 and 42b) and extending in a first direction (wherein the first direction is considered to extend from the first radiating element to the left, toward second radiating element); and a second radiator (Figure 4A element 42a) connected to the first radiator (as shown in figure 4A elements 42a and 42b), spaced from the first radiator (as shown in Figure 4A, the gap between element 42a and 42b), extending unsupported in the first direction, and having an end connected to an antenna cable (Figure 4A element 46, where a second antenna 46 is a conductor in the helical shape (i.e. wire or cable)).

Note: The words "a portable computer including a main body and monitor" were not given a patentable weight because those words are contained in the preamble of

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the claim and F antenna described in the body of the claim can be used also in other devices beside the portable computer.

As to claims 6 and 13, Hayes et al disclose that frequency bands of the first radiator (Figure 4A element 42b) and the second radiator (Figure 4A element 42a) are changed according to adjustments of at least one of a length of the first radiator, a length of the second radiator, and a gap between the first radiator and the second radiator (paragraph 50).

As to claim 7, Hayes et al disclose the second radiator (Figure 4A element 42a) being disposed in parallel with a side of the first radiator (as shown in figure 4A elements 42a and 42b).

As to claim 8, Hayes et al disclose a planar inverted F antenna comprising: a ground plane (Figure 4A element 43), a first radiator connected to the ground plane, and extending in a first direction with a predetermined separation from the ground plane (as shown in figure 4A elements 42b and 43); a second radiator connected to a first end thereof radiator and extending unsupported, in the first direction (as shown in the figure 4A elements 42a and 42b, where first end is considered to be the part of element 42a which is directly connected with element 42b); and an antenna cable (Figure 4A or 4B element 46) connected to a second end of the second radiator (Figure 4A, where second end is considered to be a far most top end of element 42a to which an antenna cable 46 is connected).

As to claim 9, Hayes et al discloses the antenna operating in more than two frequency bands (paragraph 5, since it is written in this paragraph that more than one

communication system is utilized , and each communication system such as GSM or DCS operates at two different frequencies, this leads to the conclusion that the F antenna as described by Hayes et al is capable of operating in four different frequencies).

As to claim 10, Hayes et al disclose the first (Figure 4A element 42b) and second (Figure 4A element 42a) radiators are substantially parallel (as shown in figure 4A elements 42a and 42b).

As to claim 11, Hayes et al disclose the first radiator (Figure 4A element 42b) and the ground plane (Figure 4A element 43) being substantially parallel (as shown in figure 4A elements 42b and 43).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2, 15-20 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayes et al (US 2002/0123312) in the view of Masaki et al (US 6388627).

As to claim 2, Hayes et al discloses all the limitations presented in claim 1, they do not teach however, the planar inverted F antenna being installed in an upper part of the monitor. Masaki et al teach installing an antenna on the top of the display housing. It

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would have been obvious to one of the ordinary skill in the art during the time when the invention was made to incorporate Masaki et al teaching (i.e. laptop which has an antenna in the middle of the top of the display housing) and combine it with Hayes et al teaching, to incorporate F antenna into the laptop, because F antenna is well suited for use in the electronic devices undergoing miniaturization (US 2002/0123312 paragraph 4) for instance laptops and in addition to this F antenna as described above can work within multiple frequency bands (paragraph 5) and F antenna has high gain and omni directional radiation (US 2002/0000939 paragraph 4). All those advantages of F antenna are really important aspects, and there are highly suitable for such a device like portable computer where users want to have wireless access to the internet, and where the antenna should be small enough so it does not require larger housing.

As to claim 15, Hayes et al teach a planar antenna (Figure 4A), the antenna having: a ground plane (Figure 4A element 43). A first radiator (Figure 4A element 42b) connected to the ground plane (43), with a predetermined separation from the ground plane (as shown in figure 4A elements 43 and 42b), a second radiator (Figure 4A element 42a) connected at a first end thereof to the first radiator (as shown in figure 4A where part directly connecting with the first radiator is considered to be a first end), and an antenna cable (Figure 4A element 46) connected to a second end of the second radiator (as shown in figure 4A where the top edge of the second plate (42a) is considered to be a second end of the second radiator). Hayes et al do not teach a main body, a monitor and F antenna being installed in the monitor. Masaki et al teach a laptop comprising an antenna mounted in the top part of the monitor. It would have

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been obvious to one of the ordinary skill in the art during the time when the invention was made to use the F antenna taught by Hayes et al in the portable computer taught by Masaki et al because portable computers are often used by user for surfing an internet using wireless connection, which allows an individual to move around place and being able to use an internet. F antennas have very good radiation pattern and performance (Intel Technology Journal Q2, 2000, page 3 last paragraph). Those features are critical in providing long-range wireless connection. Installing an antenna on the top of monitor allows for better signal propagation and therefore better connection since top of monitor housing is the highest point in the laptop.

As to claim 16, Hayes et al discloses the antenna operating in more than two frequency bands (paragraph 5, since it is written in this paragraph that more than one communication system is utilized , and each communication system such as GSM or DCS operates at two different frequencies, this leads to the conclusion that the F antenna as described by Hayes et al is capable of operating in four different frequencies).

As to claim 17, Hayes et al also teach the first and the second radiators (Figure 4A elements 42a and 42b) being substantially parallel (as shown in the figure 4A).

As to claim 18, Hayes et al further teach the first radiator (Figure 4A element 42b) and the ground plane (Figure 4A element 43) being substantially parallel (as shown in the figure 4A).

As to claim 19, Hayes et al teach the ground plane (Figure 4A element 43), the first radiator (Figure 4A element 42b), and a second radiator (Figure 4A element 42a)

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being integrally formed (as shown in figure 4A, the meaning of word "integrally" is better explained in the justification for rejection of claim 12).

As to claim 20, Hayes et al also teach that the frequency bands of the antenna are adjusted by adjusting at least one of a length of the first radiator (Figure 4A element 42b), a length of the second radiator (Figure 4A element 42a), and a gap between the first and second radiators (paragraph 50).

As to claim 24, Hayes et al and Masaki et al teach all the limitations presented in claim 15, Masaki et al also teach a portable computer comprising: a latch part to open and close the monitor with respect to the main body (column 3 lines 22-26, where lock button inherently has to be connected with a latch in order to open or lock the computer, as seen in all portable computers), wherein the antenna is installed in the latch part (column 3 lines 22-26).

As to claim 25, Hayes et al teach a planar antenna (Figure 4A), the antenna having: a ground plane (Figure 4A element 43). A first radiator (Figure 4A element 42b) connected to the ground plane (43) and extending in the first direction (wherein first direction is considered to extend from the feed to the left side of the antenna), with a predetermined separation from the ground plane (as shown in figure 4A elements 43 and 42b), a second radiator (Figure 4A element 42a) connected at a first end thereof to the first radiator and extending, unsupported, in the first direction (as shown in figure 4A where part directly connecting with the first radiator is considered to be a first end), and an antenna cable (Figure 4A element 46) connected to a second end of the second radiator (as shown in figure 4A where the top edge of the second plate (42a) is



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considered to be a second end of the second radiator). Hayes et al do not teach a main body, a monitor and F antenna being installed in the monitor. Masaki et al teach a laptop comprising an antenna mounted in the top part of the monitor. It would have been obvious to one of the ordinary skill in the art during the time when the invention was made to use the F antenna taught by Hayes et al in the portable computer taught by Masaki et al because portable computers are often used by user for surfing an internet using wireless connection, which allows an individual to move around place and being able to use an internet. F antennas have very good radiation pattern and performance (Intel Technology Journal Q2, 2000, page 3 last paragraph). Those features are critical in providing long-range wireless connection. Installing an antenna on the top of monitor allows for better signal propagation and therefore better connection since top of monitor housing is the highest point in the laptop.

5. Claims 4-5 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayes et al (US 2002/0123312) in the view of Masaki et al (US 6388627) and further in the view of Tsai (US 6486834).

As to claims 4 and 23, Hayes et al and Masaki et al teach all the limitations presented in claims 2 and 15. Masaki et al also teach placing an antenna on the top part of the monitor. They do not teach however that the ground plane of the planar inverted F antenna is electrically grounded on a metal part of the monitor (grounded by contacting the metal part). Tsai teaches placing an antenna on the metal part (metal hinge) of the portable computer, which is electrically connected to the ground sheet (metal sheet, Figure 2 element 26) of the antenna, so that an antenna can be connected

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to the ground (column 2 lines 66-67 and column 3 lines 1-8). Claim 23 in the application also states that the portable computer comprises a metal part, it is an inherent feature in such a device like laptop, as it can be noticed even the latch of the laptop is made of metal. It would have been obvious to one of the ordinary skill in the art during the time when the invention was made to use Tsai's teaching, and use metal part already existing in the housing or body of an electrical device and connect it with the ground plane of an antenna (as described in claim 2). An antenna has to have connection with ground in order to operate, therefore it is wise to use metal part already existing in the housing or in a body of an electrical device such as portable computer because it saves space and money and time since a part already existing in the monitor such as metal element is utilized and no additional parts are necessary for grounding purposes.

As to claim 5, Masaki et al teach a portable computer comprising: an opening/closing part with a casing (column 3 lines 22-26 and figure 1A) wherein an antenna is provided in the casing of the opening/closing part of the monitor (column 3 lines 22-26). As it was already explained in claim 2, Hayes et al F antenna comprising first and second radiator would be used in Masaki et al portable computer instead of a plain flat antenna.

6. Claims 3 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayes et al (US 2002/0123312) in the view of Masaki et al (US 6388627) and further in the view of Hachiga et al (US 5896109).

As to claim 3, Hayes et al and Masaki et al teach all the limitations presented in claim 2, Masaki et al also teach placing an antenna with the upper part of a monitor.

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Hayes et al and Masaki et al do not teach a screw engaging the planar inverted F antenna with the surface. Hachiga et al teach a mounting an antenna on the surface using screw. It would have been obvious to one of the ordinary skill during the time when the invention was made to incorporate Hachiga et al teaching (mounting using screw, column 6 lines 65-67 and column 7 lines 1-2) into the invention described in claim 2, because screw allows detachability if needed, and this in fact makes it easier to replace parts for instance when they are broken or for any other reasons.

As to claim 21, Hayes et al and Masaki et al teach all the limitations presented in claim 15. They do not teach however that the antenna comprises an engaging part to mount the antenna to the monitor. Hachiga et al teach using screws as a method of mounting an antenna on the surface. It would have been obvious to one of the ordinary skill in the art during the time when the invention was made to use Hachiga et al method of mounting i.e. using screws, to attach an F antenna taught by Hayes et al to the portable computer housing taught by Masaki et al because of the reasons listed in the justification for rejection of claim 3.

As to claim 22, Masaki et al teach mounting an antenna in the monitor and Hachiga et al teach the engaging part having an opening (Figure 1 element 121b or 121c), through which a fastener (this part is considered to be a screw because an applicant did not describe any other kinds of fastener in the specification, column 6 lines 65-67 and column 7 lines 1-2) passes to mount the antenna.

7. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hayes et al (US 2002/0123312) in the view of Hachiga et al (US 5896109). Hayes et al teach all

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the limitations presented in claim 8, they do not teach however that the antenna comprising an engaging part, with which to mount the antenna. Hachiga et al teach using screws as a method of attaching an antenna to the surface (column 6 lines 65-67 and column 7 lines 1-2). It would have been obvious to one of the ordinary skill in the art during the time when the invention was made to incorporate Hachiga et al antenna mounting method into the F antenna though by Hayes et al because using screws as an attachment method allows for an easy detachment if necessary so it is easy to replace an antenna, therefore it is more practical.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hayes et al (US Publication 2002/0123312) in the view of Tai et al (US publication 2003/0234742). Hayes teaches all the limitations as disclosed in claim 8, he does not teach however that the ground plane, the first radiator, and the second radiator are integrally formed of a single piece of material. Tai teaches a dual frequency inverted-F antenna wherein the ground plane (Figure 1, element 13), the first radiator (Figure 1, element 12), and the second radiator (Figure 1, element 11), wherein all those pieces are integrally formed of a single piece of material (As shown in figure 1). It would have been obvious to one of the ordinary skill in the art during the time the invention was made to make the ground plane and first and second radiators integrally from the same material because all those elements have to be conductors, therefore it would have been obvious to one of the ordinary skill in the art to combine them and make them from the same material. Furthermore forming those elements integrally from the same material would make the structure more durable since there would be no pieces

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which could be easily disconnected. The other advantage of this solution would be the lower cost of production. Making a device from different elements requires additional machinery, wherein each machine is responsible for certain material or structure, if the antenna is made entirely from the same material, this process is simplified and this in fact leads to the decrease in production cost.

***Allowable Subject Matter***

9. Claim 26 is allowed.
10. The following is an examiner's statement of reasons for allowance: the prior art failed to teach a potable computer comprising a planar inverted F antenna installed in the monitor, wherein the antenna having a ground plane, a first radiator connected to the ground plane, extending, unsupported, in a first direction, and having a primary face approximately parallel to the ground plane; a second radiator connected at a first end thereof to the first radiator, extending, unsupported, in the first direction, and having a primary face approximately perpendicular to the primary face of the first radiator; and an antenna cable connected to a second end of the second radiator.
11. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Response to Arguments***

12. Applicant's arguments filed on August 17, 2005 have been fully considered but they are not persuasive.

With respect to the applicant's assertion on page 7, that Hayes neither discloses or suggests " ... a first radiator connected to the ground plane and extending in a first direction, spaced from the ground plane; and a second radiator connected to the first radiator, spaced from the first radiator, extending, unsupported, in the first direction, and having an end connected to an antenna cable", the examiner disagrees with the applicant. As pointed out in the claim rejection, the referenced figures and elements in Hayes's teaching clearly meet claimed limitations. With respect to word "unsupported", Hayes teaches the antenna comprising a second radiating element, wherein this portion does not have to be supported (Abstract, lines 11-13). Hayes states in the abstract that the second antenna (radiating element) may be directly connected to a ground plane, however he does not teach that it has to be connected to a ground, therefore the examiner considers the second radiating element being unsupported.

With respect to the applicant's assertion on page 8, that Hayes does not teach or suggest the first and second radiating elements and ground plane are integrally formed of a single piece of material, wherein this limitation is clearly stated in claim 12, the examiner agrees with the applicant that the added limitation overcomes Hayes's reference, therefore the 35 U.S.C. 102(b) rejection is withdrawn, and new rejection has been made under 35 U.S.C. 103(a).

The applicant argues on page 8, that independent claims 1 and 8 are patentably distinguish over the cited art. As it was shown above in the first paragraph of the examiner's response to arguments, Hayes teaches all limitations presented in claims 1 and 8, therefore those claims remain rejected. Claims 2-7, which depend from independent claim 1, and claims 9-14, which depend from independent claim 8 also remain rejected.

With respect to applicant's assertion on page 9, that the examiner has not provided sufficient evidence to maintain a prima facie obviousness rejection of the claim because "the examiner has provided no evidence whatsoever as to why one of ordinary skill in the art would have been motivated to combine the inverted F antenna of Hayes with the device disclosed in Masaki rather than inverted F antenna of Masaki". Further the applicant pointed out that Masaki discloses an inverted F antenna as an exemplary antenna, and thus realizes all the benefits of an F antenna asserted by the examiner. The examiner agrees that Masaki suggests the use of inverted F antenna in the portable computer, which proves that F antenna is suitable for this kind of device. Furthermore Hayes teaches an improved antenna wherein antenna is capable of operating in multiple frequency bands, has a high gain and is omni directional (US 2002/0123312, paragraph 4). All those advantages of new improved F inverted antenna as taught by Hayes is really important in the wireless network connection, for instance the one used in portable computers. According to the examiner's opinion, the motivation for combining the inverted F antenna as taught by Hayes with the portable computer as taught by Masaki, is very clear and it is taught in the prior art. The fact that Masaki

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states that F antenna can be used in the portable computer, just proves that this kind of antenna is suitable for this kind of equipment, but it is important to note that those elements always can be exchanged for the one that provide better performance, and in this case that is Hayes's antenna. Since the examiner still considers the previously given motivation as proper, claims 2 and 15-24 remain being rejected under 35 U.S.C 103(a).

### ***The Prior Art***

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- US Publication 2003/0234742 discloses a dual-frequency inverted-F antenna comprising two radiating elements, a ground plane and the cable connector attached to the second radiating element.
- US Publication 2004/0174305 discloses a multi-band antenna comprising two radiating elements and a ground plane, wherein two radiating elements are perpendicular to each other.
- US Patent 6100850 discloses an electronic price label antenna comprising two radiating elements connected to a ground plane.

### ***Conclusion***



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14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela M. Lie whose telephone number is 571-272-8445. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on 571-272-1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Angela M Lie



WILSON LEE  
PRIMARY EXAMINER